

What is claimed is:

1. An optical fiber fixing device, comprising:
 - a fixing member fixing an optical fiber in a positioning groove;
 - a stopper section retaining the fixing member before the fixing means is brought into contact with the optical fiber;
 - a driver section moving the fixing member in a first direction via the stopper section; and
 - a controller controlling the driver section to adjust a moving speed of the fixing member.
2. The optical fiber fixing device according to claim 1, wherein the fixing member vertically moves relative to the positioning groove in conjunction with movement of the stopper section.
3. The optical fiber fixing device according to claim 1, wherein the controller adjusts the moving speed according to the thickness of the optical fiber.
4. The optical fiber fixing device according to claim 1, wherein the fixing member comprises:
 - a clamp portion pressing the optical fiber against the positioning groove; and
 - a clamp arm comprising a transfer portion with a first end connected to the clamp portion, and an acting portion with a first end integrally connected to a center of the transfer portion.

5. The optical fiber fixing device according to claim 1, wherein the fixing member has a “T” shaped cross section.

6. The optical fiber fixing device according to claim 4, wherein:

the fixing member has a “T” shaped cross section;

the acting portion is the base of the “T”; and

the transfer portion is the top of the “T”.

7. The optical fiber fixing device according to claim 4, wherein the stopper section comprises:

a guide member retaining a second end of the acting portion of the clamp arm opposite the first end; and

a rack integrally formed with the guide member.

8. The optical fiber fixing device according to claim 7, wherein the guide member retains the second end of the acting portion within a groove.

9. The optical fiber fixing device according to claim 7, wherein the stopper section further comprises:

a fiber guide arranged to guide the optical fiber into the positioning groove.

10. The optical fiber fixing device according to claim 7, wherein the driver section comprises:

a motor generating a drive power in response to a command from the controller; and
a pinion gear fixedly secured to an output shaft of the motor,
wherein, when the motor is driven, the pinion gear and the rack mesh with one another to
move the guide member in the first direction.

11. The optical fiber fixing device according to claim 1, further comprising:
a sensor connected to the controller and determining whether the fixing member is
retained by the stopper section or not.

12. The optical fiber fixing device according to claim 11, wherein the sensor detects a
magnet mounted to the fixing member.

13. The optical fiber fixing device according to claim 1, further comprising:
an image pickup section for obtaining an image of the optical fiber; and
an operator section, connected to the image pickup section and the controller, and
determining whether the optical fiber is fixed in place between the fixing member and the
positioning groove with no gap.

14. The optical fiber fixing device according to claim 13, wherein, when the operator
section determines that the optical fiber is not fixed in place between the fixing member and the
positioning groove with no gap, the operator section outputs a signal to the controller to move
the fixing member away from the optical fiber via the stopper section.

15. The optical fiber fixing device according to claim 14, wherein, after the fixing member has been moved away from the optical fiber, the controller moves the fixing member toward the optical fiber at a higher speed than that attained in a preceding operation via the stopper section subsequent to the stopper section being separated from the optical fiber.

16. The optical fiber fixing device according to claim 14, wherein the operator section determines whether the optical fiber is correctly placed in the positioning groove through execution of image processing subsequent to the stopper section being separated from the optical fiber.

17. The optical fiber fixing device according to claim 16, wherein, when the operator section determines that the optical fiber is not correctly placed in the positioning groove, the operator section provides an operator with a notification.

18. The optical fiber fixing device according to claim 1 wherein the positioning groove comprises multiple grooves.

19. An optical fiber fixing device, comprising:
fixing means for fixing an optical fiber in a positioning groove;
stopper means for retaining the fixing means before the fixing means is brought into contact with the optical fiber;
driver means for moving the fixing means in a first direction via the stopper means; and

controller means for controlling the driver means to adjust a moving speed of the fixing means.

20. An optical fiber fixing device, comprising:

a fixing member comprising a bottom surface;

a block comprising a positioning groove arranged on a top surface opposing the bottom surface of the fixing member;

a stopper mechanism supporting the fixing member;

a motor directly operatively connected to the stopper mechanism to move the stopper mechanism and the fixing member.

21. The optical fiber fixing device recited in claim 20, further comprising a controller electrically connected to the motor to vary the speed of the motor.

22. The optical fiber fixing device recited in claim 21, further comprising a camera electrically connected to the controller and arranged to provide video feedback regarding the position of the optical fiber within the positioning groove.

23. The optical fiber fixing device recited in claim 22, further comprising an operator section comprising an image processor that determines the position of the optical fiber based upon the video feedback from the camera.

24. The optical fiber fixing device recited in claim 23, wherein the operator section comprises a monitor that outputs the video feedback obtained by the camera so that it may be viewed by an operator.

25. The optical fiber fixing device recited in claim 20, wherein the fixing member comprises:

a clamp portion providing the first surface of the fixing member; and

a clamp arm,

wherein the clamp arm comprises a transfer portion connected to the clamp portion and an acting portion connected to the stopper mechanism.

26. The optical fiber fixing device recited in claim 25, wherein the clamp arm is formed into a "T" shaped cross-section.

27. The optical fiber fixing device recited in claim 26, wherein the base portion of the "T" shaped cross-section of the clamp arm comprises an acting portion, and is inserted into a groove portion of the stopper mechanism.

28. The optical fiber fixing device recited in claim 20, wherein the fixing member comprises a magnet.

29. The optical fiber fixing device recited in claim 28, wherein the stopper mechanism comprises a magnetic sensor to determine the position of the magnet arranged on the fixing member.

30. The optical fiber fixing device recited in claim 20, wherein the stopper mechanism comprises a rack directly connected to a pinion gear of the motor to move the stopper mechanism.

31. The optical fiber fixing device recited in claim 20, wherein the block comprises a plurality of positioning grooves provided for multi-core optical fibers.

32. A method of fixing an optical fiber comprising the steps of:
arranging an optical fiber in a positioning groove;
moving a fixing member to the optical fiber;
retaining the fixing member using a stopper section before the fixing member is brought into contact with the optical fiber; and
controlling a moving speed of the fixing member and fixing the optical fiber via the stopper section.

33. The method of fixing an optical fiber according to claim 32, further comprising the step of determining the thickness of the optical fiber, wherein, in the step of controlling a moving speed of the fixing member, the moving speed is determined based upon the thickness of the optical fiber.

34. The method of fixing an optical fiber according to claim 32, further comprising the step of determining if the fixing member is retained by the stopper section.

35. The method of fixing an optical fiber according to claim 32, further comprising the step of determining whether the optical fiber is fixed in place between the fixing means and the positioning groove with no gap.

36. The method of fixing an optical fiber according to claim 35, wherein, if it is determined that the optical fiber is not fixed in place between the fixing means and the positioning groove with no gap, the fixing member is moved away from the optical fiber.

37. The method of fixing an optical fiber according to claim 36, wherein, after the fixing member has been moved away from the optical fiber, the fixing member is moved toward the optical fiber at a higher speed than that of the preceding movement of the fixing member towards the optical fiber.

38. The method of fixing an optical fiber according to claim 35, further comprising the step of notifying the operator if it is determined that the optical fiber is not correctly placed in the positioning groove.